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ABSTRACT

Based on national data from Prospects: The Congressionally Mandated Study of Educational Growth and Opportunity, researchers identified individual characteristics that distinguished academically successful, or resilient, third grade students from minority and low socioeconomic status (SES) backgrounds from their less successful, or nonresilient, counterparts. They also formulated and tested four distinct models of the risk factors and resilience-promoting features of schools: the effective schools model, peer group comparison model, school resources model, and supportive school community model. Results suggest that minority students from low-SES backgrounds were exposed to greater risks and fewer resilience-promoting conditions than otherwise similar low-SES White students. Researchers conclude that minority students had poorer levels of internal locus of control and academic self-efficacy and were exposed to school environments that were less conducive to academic resilience. Greater engagement in academic activities, and internal locus of control, efficaciousness in math, a more positive outlook toward school, and a more positive self-esteem were characteristic of all low-SES students who achieved resilient outcomes. Some evidence suggests that effective school practices and an internal locus of control may be more important to the academic resilience of African Americans than for that of White and Latino students. The most powerful school characteristics for promoting resiliency were represented by the supportive school community model, which, unlike the other school models, included elements that actively shielded children from adversity. (Contains 38 references.) (Author/SM)

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ACADEMIC SUCCESS AMONG POOR AND MINORITY STUDENTS

An Analysis of Competing Models of School Effects

Geoffrey D. Borman

Laura T. Rachuba

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Johns Hopkins University

Report No. 52

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Every child has the capacity to succeed in school and in life. Yet far too many children, especially those from poor and minority families, are placed at risk by school practices that are based on a sorting paradigm in which some students receive high-expectations instruction while the rest are relegated to lower quality education and lower quality futures. The sorting perspective must be replaced by a "talent development" model that asserts that all children are capable of succeeding in a rich and demanding curriculum with appropriate assistance and support.

The mission of the Center for Research on the Education of Students Placed At Risk (CRESPAR) is to conduct the research, development, evaluation, and dissemination needed to transform schooling for students placed at risk. The work of the Center is guided by three central themes — ensuring the success of all students at key development points, building on students' personal and cultural assets, and scaling up effective programs — and conducted through research and development programs in the areas of early and elementary studies; middle and high school studies; school, family, and community partnerships; and systemic supports for school reform, as well as a program of institutional activities.

CRESPAR is organized as a partnership of Johns Hopkins University and Howard University, and supported by the National Institute on the Education of At-Risk Students (At-Risk Institute), one of five institutes created by the Educational Research, Development, Dissemination and Improvement Act of 1994 and located within the Office of Educational Research and Improvement (OERI) at the U.S. Department of Education. The At-Risk Institute supports a range of research and development activities designed to improve the education of students at risk of educational failure because of limited English proficiency, poverty, race, geographic location, or economic disadvantage.

ABSTRACT

Based on national data from the Prospects study, we identified the individual characteristics that distinguished academically successful, or resilient, elementary school students from minority and low-socioeconomic-status (SES) backgrounds from their less successful, or non-resilient, counterparts. We also formulated and tested four distinct models of the risk factors and resilience-promoting features of schools: (a) the effective schools model; (b) the peer-group composition model; (c) the school resources model; and (d) the supportive school community model. Our results suggest that minority students from low-SES backgrounds were exposed to greater risks and fewer resilience-promoting conditions than otherwise similar low-SES White students. In general, though, the results supported the applicability of uniform individual and school-level models of academic resiliency to all low-SES students, regardless of their race. Greater engagement in academic activities, an internal locus of control, efficaciousness in math, a more positive outlook toward school, and a more positive self-esteem were characteristic of all low-SES students who achieved resilient outcomes. The most powerful school characteristics for promoting resiliency were represented by the supportive school community model, which, unlike the other school models, included elements that actively shielded children from adversity. The implications of these findings for theory and for policy are discussed.

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INTRODUCTION

The general objective of this study was to help develop an improved understanding of the individual and school-level features that distinguish academically successful, or resilient, elementary school students from minority and low-socioeconomic-status (SES) backgrounds from their less successful, or non-resilient, counterparts. We addressed this objective through several means. First, rather than considering the resilience of students from only one racial/ethnic group, as have many previous studies, we contrasted the outcomes for three groups: African American, Hispanic, and White students. We investigated whether the allotments of the individual and school characteristics associated with academic resilience differed as a function of race/ethnicity and whether any of the individual and school characteristics were more important predictors of resilience among certain racial/ethnic subgroups. To clarify how schools may affect students' resilient outcomes, we formulated and tested four distinct models of the risk factors and resilience-promoting features of schools: (a) the effective schools model; (b) the peer-group composition model; (c) the school resources model; and (d) the supportive school community model. Taken together, these analyses provide valuable new information regarding the extent to which characteristics of academically resilient children may generalize across individuals and the extent to which various school-effects models may apply to and impact the resilience construct.

Individual and School Characteristics Associated with Academic Risk and Resilience

Historically, children from poverty have been disproportionately placed at risk of academic failure (Natriello, McDill, & Pallas, 1990). Along with poverty, researchers also have associated an individual's status as a racial or cultural minority with academic risk (Gordon & Yowell, 1994; Natriello, McDill, & Pallas, 1990). Beyond such individual factors, schools that serve children of poverty and of color also may introduce risk factors by failing to provide a supportive school climate, by institutionalizing low academic expectations, or by delivering inadequate educational resources. Finally, academic risks may be associated with the potential discontinuity, or "lack of fit," between the behavioral patterns and values socialized in the context of low-income and minority families and communities and those expected in the mainstream classroom and school contexts (Boykin, 1986; Delpit, 1995; Gordon & Yowell, 1994; Taylor, 1991). For instance, Fordham and Ogbu (1986) argued that because African Americans have had limited opportunities in America, they developed an "oppositional" culture that equated doing well in school with "acting White" or "selling out." Therefore, individual characteristics, school characteristics, and the interactions between individual and school characteristics all may contribute to a student's risk of academic failure.

Increasingly, researchers have begun to look at the flip side of risk, and instead have focused on the factors that enable at-risk students to "beat the odds" against achieving

academic success. Borrowing primarily from the field of developmental psychopathology, a growing body of educational research has identified individual attributes that promote academic resiliency. Developmental psychologists, such as Rutter (1987) and Garmezy (1991), have recognized that among groups believed to be at high risk for developing particular difficulties, many individuals emerge unscathed by adversity. The observation that only one out of four children of alcoholic parents will become an alcoholic is a familiar example of this phenomenon (Benard, 1991). The capacity for resilience varies from individual to individual, and it may grow or decline over time, depending in part on protective factors within the person that might prevent or mitigate the negative impacts of stressful situations or conditions (Henderson & Milstein, 1996). Individual characteristics of resilient children typically include an internal locus of control, high self-esteem, high self-efficacy, and autonomy (Wang, Haertel, & Walberg, 1994). Resilient children also are actively engaged in school (Finn & Rock, 1997), have strong interpersonal skills, maintain healthy expectations, and have a high level of activity (Benard, 1991). All of these characteristics highlight the underlying perseverance, strong will, and positive disposition of the resilient child.

A substantial amount of work on resilient children has focused on historically disadvantaged minorities of low socioeconomic status. In particular, educational researchers have devoted considerable attention to academically successful African American students (e.g., Clark, 1983; Connell, Spencer, & Aber, 1994; Taylor, 1994; Winfield, 1991). This focus is understandable, in that minority students tend to be impacted by poverty and other risk factors with a greater frequency than White students. Researchers such as Taylor (1994) have pointed out additional risk factors associated with being an African American, including daily experiences of discriminatory behavior from individuals and institutions, and political, occupational, and residential restrictions motivated by race. Nevertheless, no known research has explicitly contrasted whether the characteristics of resilient minority and majority students may differ.

Beyond the individual characteristics of resilient children, researchers have begun to pay more attention to understanding how schools may affect students' academic resiliency. Resilience researchers note that school environments may provide protective factors that mitigate against school failure and that they may introduce additional stressors and adversities that place students at even greater risk of academic failure. A few researchers, such as Benard (1991), Henderson and Milstein (1996) and Wang, Haertel, and Walberg (1995), have devoted considerable attention to the issue and have formulated theoretical models of how schools may foster resiliency in students. Little systematic research, though, has formally tested these models or provided other general evidence concerning the processes and characteristics of schools that may affect academic resilience.

Some contemporary researchers suggest that the effective schools model of the 1970s and 1980s, which was popularized by Ron Edmonds (1979), tells us a great deal about how schools may affect resilience, in that effective schools are said to promote academic success among traditionally low-performing disadvantaged minority students (Lee, Winfield, & Wilson, 1991; Masten, 1994; Wang et al., 1994; 1995). At least one

feature included in the effective schools model, the goal of achieving a safe and orderly school environment, is well linked to the affirmation of healthy social behavior that is characteristic of resilient children. However, the core of the effective schools model is focused on developing students academically. Developing into a successful student may, in itself, shield children from adversity by enhancing self-esteem, efficacy, and a sense of belonging within the school. Most often, though, when discussing the features of schools that foster resilience, these researchers have explicitly listed effective school characteristics, such as strong principal leadership and a clear school mission, but have been less definitive about the processes through which these characteristics may be related to the psychosocial phenomenon of resilience.

Another research tradition that seems to have had an impact on models of how school environments may affect students' academic resilience is the school-effects approach popularized by Coleman et al. (1966) and perpetuated, in part, by educational production-function studies of the relationships between school resources and achievement. This legacy holds that school funding, resources, and the peers a student goes to school with are important predictors of students' academic outcomes. Although contemporary resilience researchers have not explicitly made the connection to this model, Wang et al. (1995) and others, such as Masten (1994), have noted that limited resources in the school environment, and within the community at large, may prevent students from achieving resilient outcomes. Wang and her colleagues also have suggested that students who attend schools with high concentrations of underachieving, poor, and minority peers may be placed at increased risk of academic failure. On the other hand, at-risk students who attend well-funded schools with quality resources and more advantaged and academically successful peers, presumably, stand a better chance of achieving resilient academic outcomes. Like the effective schools characteristics, though, few authors have noted clear mechanisms through which a school's resources and the composition of its student body may actively build resilience within students.[1] Instead, these characteristics are most often presented as potential indicators of the level of risk or adversity that may exist in the child's learning environment.

A final set of school characteristics seems to function more clearly as protective mechanisms and processes for promoting academic resilience. Consistently, resilience researchers cite the need for caring and supportive teachers (e.g., Benard, 1991; Henderson & Milstein, 1996; Werner & Smith, 1989); a safe and orderly school environment (e.g., Freiberg, Stein, & Huang, 1995; Wang et al., 1995); positive expectations for all children (e.g., Benard, 1991; Henderson & Milstein, 1996; Rutter, 1979); opportunities for students to become meaningfully and productively involved and engaged within the school (e.g., Benard, 1991; Braddock, Royster, Winfield, & Hawkins, 1991; Finn & Rock, 1997), and efforts to improve partnerships between the home and school (e.g., Comer, 1984; Masten, 1994; Wang et al., 1994). Rather than general measures of a school's "effective" features, or indicators of the level of risk or adversity introduced by a school's student composition or lack of resources, this group of school attributes has a much clearer link to promoting the psychosocial process of resilience building.

Objectives and Hypotheses

Educators and researchers have done a great deal more to classify and describe conditions of risk than to develop successful remedies (Catterall, 1998; Wang & Gordon, 1994). Out of this research has emerged a tendency to label whole groups of students as "at risk" when, in fact, many of them succeed. Rather than identifying achievement gaps, resilience research offers the possibility of discovering why individuals succeed despite adversity. Focusing on alterable student behaviors and school-level features that are related to academic resilience provides the additional benefit of identifying potential changes to policies and practices that may promote academic resilience among more children placed at risk. Although there has been clear progress in formulating models of the school characteristics associated with academic resilience, the empirical research needed to test and refine these models, and to establish related policies and interventions, remains thin. Resilience research is clearer regarding the individual characteristics of children that are generally associated with academic success, but little is known about how these characteristics may generalize across students of different ages, races, or ethnic groups. Therefore, despite the promise of the academic resilience concept, more detailed research is needed to realize its full potential.

Several important theoretical ideas and hypotheses influenced the direction of our research. First, like Masten (1994), we envisioned resilience as a developmental process occurring over time, eventually characterized by good psychosocial and behavioral adaptation despite developmental risk, acute stressors, or chronic adversities. We therefore utilized a longitudinal design, which tracked the progress of low-SES children from third through sixth grade. Second, with respect to theoretical models of how schools may affect students' resilience, we hypothesized that those models with clearer links to fostering the psychosocial process of resilience would be more consistent predictors of this outcome. Thus, although some researchers have referred to school resources, the composition of the student body, and effective schools characteristics as important indicators of environmental risks or supports, these school features may have less powerful direct impacts on students' academic resilience than school-based efforts that actively shield disadvantaged children from the risks and adversities within their homes, schools, and communities.

Finally, because no research on academic resilience has explored racial/ethnic group differences, our across-group analyses of the distributions of the individual and school characteristics associated with academic resilience, and of the racial/ethnic group interaction effects (both group-by-individual-characteristics and group-by-school-characteristics), were largely exploratory and descriptive. These analyses, though, were guided in part by some previous findings from outside resilience research. First, as Natriello et al. (1990) noted, indicators of risk, such as poverty and minority status, are not independent, "so that a child likely to be classified as educationally disadvantaged on one is more likely to be so classified on the basis of the others" (p. 16). Correspondingly, relative to low-SES White students, the "double jeopardy" of being a low-SES minority student may compound the chance of being exposed to other individual and school characteristics associated with risk rather resilience. We hypothesized, therefore, that our analyses of the

across-group distributions of individual and school characteristics would tend to reveal greater exposure to risk conditions, and less exposure to resiliency-building conditions, for low-SES African American and Latino students than for low-SES White students.

Hypotheses regarding racial/ethnic group interaction effects were guided by two general streams of research. First, it appears that research comparing minority and White students on psychosocial variables associated with academic success, such as an internal locus of control, a strong self-concept of one's ability, and high self-esteem, provides no consistent evidence concerning across-group differences, including potential interaction effects (Graham, 1994). With respect to possible interactions between school variables and racial/ethnic group membership, some evidence, which dates back to the Coleman report (Coleman et al., 1966), has suggested that minority students may be more strongly impacted by school effects than White students. The recent Tennessee class-size experiment (Word et al., 1990) also provided strong evidence that improved school resources in the form of reduced class sizes may have a more profound effect on the achievement of minority students than White students. Finally, school effects that actively foster students' resiliency often depend on strong, supportive relationships with their teachers. Although Ferguson (1998) warns that the evidence is thin, the research he reviewed suggests that teachers' beliefs, expectations, and behaviors may affect African American students more than Whites. Taking these findings into consideration, we hypothesized that we would find some school effects to be stronger for African American and Latino students' than for White students, but we did not expect to find racial/ethnic group interaction effects for the individual psychosocial variables predicting resilient outcomes.

METHOD

Data and Sample

This research was based on data from *Prospects: The Congressionally Mandated Study of Educational Growth and Opportunity*. The national Prospects sample was selected using a three-stage stratified design, with districts as the first-stage unit, schools within districts as the second-stage unit, and, where necessary for design efficiency, students within designated grades within schools as the third-stage unit. The data set contains standardized achievement scores for as many as 40,000 students from three grade cohorts (first grade, third grade, and seventh grade) over a four-year period beginning in 1991. Students completed questionnaires during each year of the study. Detailed questionnaires also were administered during each year of the study to parents, teachers, school principals, and school district personnel. The Prospects data collection staff abstracted additional student-level information from school records during the spring of each year of the study. Although Prospects provides student sample weights, our analyses focused on a select subsample of at-risk students and, therefore, the use of sample weights, which were designed to generate national estimates, was not appropriate.

The data set we employed contained 3,981 students in the third grade cohort with complete data on the variables of interest. Of those 3,981 students, 15% were African American, 19% were Latino, and 66% were White. An ordinary least squares regression analysis was performed on this sample to identify students performing better or worse on the sixth-grade Comprehensive Test of Basic Skills, Fourth Edition (CTBS/4) Total Math outcome than predicted by their third-grade Total Math score and SES. The following equation resulted:

$$Y_i = 298.94 + 5.82(\text{SES})_i + 0.64(\text{GR3_MATH})_i$$

We obtained standardized residual scores for each student by subtracting the achievement score predicted by the regression from the student's actual score and expressing the resulting residual as a z-score. Students with standardized residuals of 0.33 or greater were defined as performing better than expected, or as academically resilient, and those with standardized residuals at or below -0.33 were defined as performing worse than expected, or as non-resilient. We then reduced the sample to contain only African American, Latino, and White students from low-SES backgrounds, defined as at or below a value of -0.33 on the standardized SES measure (M = 0.01, SD = 0.76). We measured resiliency in math because of our strong focus on school effects. Researchers, such as Murnane (1975), have shown that schooling tends to have a more pronounced influence on students' math relative to reading skills.

After applying these selection criteria, the final sample was reduced to 925 students, of whom 26% were African American, 32% were Latino, and 43% were White. The parents' of these children, on average, had 1991 to 1994 household incomes between $7,500 and $14,999 and had completed schooling through the eighth to twelfth grade (or GED).[2] During the baseline year of the study, the 925 students were enrolled in 146 schools. Due to student mobility, the students attended a total of 249 schools over the four-year period. Five hundred and twenty one students met the criterion for performing above expectations on math achievement (23% African American, 35% Latino, and 42% White) and 404 were identified as performing below expectations (29% African American, 27% Latino, 44% White). Resilient students performing above expectations had median national percentile scores of 39 on the third-grade pretest and 59 on the sixth-grade posttest and non-resilient students performing below expectations had median national percentile scores of 38 on the pretest and 11 on the posttest.

Measures

Brief descriptions of all measures are provided in Table 1 along with means and standard deviations for the original sample of 3,981 students. For all measures summarized in Table 1, with the exception of the third- and sixth-grade CTBS/4 Total Math scale scores, we developed four separate yearly measures. After developing each of the yearly measures, we took their average as the final longitudinal measure. Thus, the final measures used in the analyses represented the typical individual, classroom, and school experiences of each child from the third through sixth grades. As the descriptions in Table 1 suggest, most of the

variables used in the analysis were composite measures. In developing each of the four yearly composite measures, each item was standardized to a mean of 0 and standard deviation of 1, and the mean of the items representing each construct was obtained as the final yearly factor measure. The factor structures of all yearly composite measures were then analyzed using principal components analysis with varimax rotation. As a summary of the internal consistency reliability of each derived construct, Table 1 also provides Cronbach's alpha for the first of the four yearly composites.

We developed a set of individual characteristics of resiliency and four categories of school characteristics related to academic resilience: peer-group composition variables; school resources variables; effective schools measures; and supportive school environment measures. We included in our analysis some of the most widely cited individual characteristics associated with resilience: an internal locus of control; self-esteem; self-efficacy; engagement in school; and a positive disposition. The choice of these variables allowed us to test the generalizability across racial/ethnic groups of an accepted set of individual factors related to the resilience construct. We also attempted to choose sets of school variables that were representative of each of the four school-effects models. This choice of school variables supported our analysis of how well accepted school-effects models generalized across racial/ethnic groups, and it supported our examination of whether the students' exposure to the various school characteristics differed by resilience status. Below, we provide more detailed information about the questionnaire items on which the measures were based.

Individual Characteristics. We developed five measures of individual characteristics associated with resilience. The locus of control factor was derived from a four-item scale adapted from Rotter (1966). Typical items are "Every time I try to get ahead, something or somebody stops me," and "To do well in school, good luck is more important than hard work." Despite the poor measurement performance of this composite with our sample (Cronbach's $\alpha = .17$), we retained it because the items were based on a well-established scale.[3] General self-esteem was based on a 10-item scale derived from Rosenberg (1979). Typical items include "I feel good about myself," and "I am able to do things as well as most people." Rather than assessing general academic competencies, we used a domain-specific assessment of students' efficacy in mathematics (Pajares, 1996). This scale is composed of four items, including "I have a lot of trouble in math," and "I am very good at math."

Student Engagement was based on 10 items, reported by the student's classroom teacher, in the Student Profile instrument, including ratings of the extent to which the student pays attention in class, works up to his or her potential, and takes part in class discussions. Most items making up this scale fall into "Level 1" (i.e., acquiescence to classroom and school rules) of Finn's (1989) taxonomy of engagement, but several represent characteristics of "Level 2" engagement (i.e., initiative taking by the student). Finally, we measured student's overall disposition toward school using a six-item scale, which included items such as how enjoyable the student found math class and how positively the student felt about going to school everyday.

Table 1

Descriptions of Variables

VARIABLE NAME	DESCRIPTION
CTBS/4 Total Math Scale Scores	Third (M = 676.36, SD = 46.69) and sixth grade (M = 733.01, SD = 47.80) vertical scale scores composed of the Math Concepts & Applications and Math Computation subtests
Socioeconomic Status	A composite measure derived from the income and education level, reported by the parent (M = 0.01, SD = 0.76).
Student Engagement	A composite measure of the extent to which teachers agreed that a student expressed attitudes and exhibited behaviors indicating an interest in school work and a desire to learn (M = 0.10, SD = 0.63, α = .92).
Self-esteem	A composite measure of how strongly each student agreed that s/he is a good person of value (M = 0.04, SD = 0.41, α = .58).
Locus of Control	A composite variable indicating the extent to which students agreed that they had control over circumstances in their lives (M = 0.05, SD = 0.41, α = .17).
Self Efficacy in Math	A composite measure of the degree to which students reported that they were good math students who had few problems with the subject (M = 0.07, SD = 0.54, α = .63)
Positive Attitude toward School	A composite measure of how positively students viewed attending school (M = 0.00, SD = 0.46, α = .52).
Percent Minority Students	The percentage of minority students attending the school (M = 0.35, SD = 0.33).
Percent Free-lunch Eligibility	The percentage of students at the school eligible for free- or reduced-price lunch assistance (M = 0.50, SD = 0.26).
Percent Low Achieving Students	The percentage of students at the school achieving below the 50th national percentile. (M = 0.36, SD = 0.17).

Table 1 (continued)

VARIABLE	DESCRIPTION
Availability of Instructional Resources	A composite measure of teacher reports of the availability of a variety of basic instructional resources, such as notebooks, pens and pencils, and a photocopier ($M = 0.06$, $SD = 0.71$).
Teacher's Years of Experience	A continuous variable based on teachers' responses to the question, "counting this year, how many years in total have you taught at either the elementary or secondary level ($M = 14.24$, $SD = 5.58$).
Class Size	A continuous variable representing teacher reports of the typical number of students in their classrooms ($M = 24.33$, $SD = 4.14$).
Percent of Academic Instruction	A continuous variable indicating the percent of classroom time teachers reported that they devoted to academic instruction ($M = 0.70$, $SD = 0.10$).
Clear Goals	A composite variable indicating the extent to which teachers reported that school goals were clearly stated and that the staff shared a vision for achieving high standards ($M = 0.00$, $SD = 0.58$, $\alpha = .65$).
Principal Leadership	A composite variable measuring the degree to which teachers reported that the principal was an effective administrator and was supportive of their needs ($M = -0.03$, $SD = 0.59$, $\alpha = .77$).
Monitoring Student Progress	A composite variable indicating the degree to which teachers shared information with other teachers about a student's academic progress ($M = -0.00$, $SD = 0.56$, $\alpha = .60$).
Safe and Orderly Environment	A composite measure of the degree to which principals reported a lack of student behavioral problems ($M = -0.02$, $SD = 0.52$, $\alpha = .82$).
Positive Teacher-Student Relations	A composite measure of the degree to which students reported positive classroom interactions with their teachers ($M = 0.35$, $SD = 0.35$, $\alpha = .61$).
Support for Family Involvement	A composite variable indicating the extent to which parents reported opportunities for families' involvement in the life of the school ($M = 0.03$, $SD = 0.39$, $\alpha = .71$).

Peer-Group Characteristics. We developed three variables to summarize the peer-group characteristics within the schools that students attended. These variables took into account two widely used school-level indicators of risk, the concentration of economically disadvantaged and minority students, and the overall academic performance of students within the school. All three variables were based on single items drawn from the Characteristics of Schools and Programs instrument, which was completed by the school principal or by other school personnel who had access to the requested information. The variables, percent minority students, percent free-lunch eligibility, and percent low-achieving students, are described in Table 1.

School Resources. Rather than school-level measures of resources, the three variables derived from the Regular Classroom Teacher Questionnaire represented the resources students actually experienced in their classrooms. Our first variable, the teacher's years of experience, was noted as one of the most important school resources in Hedges, Laine, & Greenwald's (1996) synthesis of education production-function studies. The importance of our second variable, class size, was highlighted by the recent state-wide experiment of Word et al. (1990) that documented the strong effects of small class sizes on student achievement. Along with an experienced teacher and the greater attention afforded by a small class, students need an adequate supply of basic supplies, like pencils and notebooks. Our third measure, the availability of instructional resources, was based on teachers' average responses to six separate items assessing the availability of: (a) notebooks for students; (b) pens and pencils; (c) ditto masters; (d) photocopiers; (e) basic supplies; and (f) general materials to meet students' needs.

Effective Schools Variables. Although the effective schools literature has generated a longer list of school characteristics associated with effectiveness, the four variables we developed from teacher questionnaires are among the most frequently cited. Few would disagree that maximizing learning time, monitoring student progress, having clear schoolwide goals, and strong principal leadership are features strongly identified with the effective schools model (Levine & Lezotte, 1995). Percent of academic instruction was based on regular classroom teachers' reports of the proportion of classroom time that was devoted to academic activities rather than non-instructional tasks (e.g., attendance), the personal or social development of students, or other classroom activities. The monitoring student progress measure was based on three items from the Classroom Teacher Questionnaire that assessed the extent to which teachers consulted with other classroom teachers, compensatory education teachers, or special education teachers regarding students' progress, and the extent to which they shared information about students' progress with other teachers.

Clear goals and strong principal leadership were composite factors based on responses from both regular classroom and resource (Chapter 1) teachers. The clear goals variable was comprised of three items that asked regular or resource teachers how strongly they agreed that: "Most of my colleagues share my beliefs and values about what the central mission of the school should be;" "Goals and priorities for the school are clear;" and "Staff members maintain high standards." Principal leadership was based on six items asked of regular or resource teachers. Typical items are "The principal deals effectively

with pressures from outside the school that might interfere with my teaching" and "The principal sets priorities, makes plans, and sees that they are carried out."

Supportive School Environment. Three composite variables comprised this category, which focused on the school variables most clearly linked to the psychosocial construct of resilience. One variable, safe and orderly environment, also has been mentioned as an important effective schools variable. Due to the stronger link between this variable and resilience, rather than its relationship with school effectiveness in general, we included it within the supportive school environment category. The safe and orderly environment variable was based on principals' ratings of the degree to which nine behaviors, including gang activity and physical conflict among students, were problems with students at their schools. Positive teacher-student relations, based on six items from the Student Questionnaire, assessed the degree to which students reported positive and supportive relationships with their teachers. Typical items included "Most of my teachers really listen to what I have to say," and "In class I often feel 'put down' by my teachers." The third variable, support for parent involvement, was based on 15 items from the Parent Questionnaire, including "The school feels it is important for parents to participate in the life of the school," and "Parents have a say in setting school policy."

Analytical Procedures

After obtaining our sample of low-SES resilient and non-resilient students based on the regression model described previously, we began by comparing simple descriptive statistics by resilience status and by racial/ethnic group. These descriptive statistics are presented in Table 2. In addition, by comparing the data in Table 2 to the data for the larger Prospects sample of 3,981 students, presented in Table 1, one may understand how the individual and school characteristics for our select subsamples resemble or differ from those for the average student.

To answer the primary questions of the study, we performed a series of multivariate analyses of variance (MANOVAs) with resilience status and race/ethnicity as factors of classification. We first examined differences between resilience groups and among racial/ethnic groups on the set of individual characteristics. Second, we examined group differences on the four sets of school characteristics. In addition to the main effects of resilience status and race/ethnicity, our analyses also examined the potential interactions of these two factors. Therefore, these analyses answered: (a) whether the individual characteristics and schools of resilient and non-resilient students differed; (b) whether the individual characteristics and schools of White, African American, and Latino students differed; and (c) which, if any, of the individual and school characteristics were more important predictors of resilience among certain racial/ethnic subgroups.

Table 2

Sample Means and Standard Deviations by Resilience Status and by Race/Ethnicity

	RESILIENCE STATUS		RACE/ETHNICITY		
	Resilient	Non-Resilient	Afr. Am.	White	Latino
n	404	521	236	398	291
Individual Characteristics					
Student Engagement	0.11 (0.59)	-0.38 (0.59)	-0.22 (0.64)	-0.09 (0.62)	-0.03 (0.65)
Locus of Control	0.01 (0.39)	-0.16 (0.44)	-0.14 (0.41)	-0.01 (0.42)	-0.07 (0.42)
Self-Efficacy in Math	0.01 (0.56)	-0.16 (0.59)	-0.05 (0.53)	-0.02 (0.60)	-0.14 (0.57)
Positive Attitude Toward School	0.08 (0.38)	-0.11 (0.50)	-0.03 (0.44)	-0.02 (0.45)	0.06 (0.44)
Self-esteem	-0.02 (0.39)	-0.10 (0.39)	-0.01 (0.35)	-0.06 (0.43)	-0.09 (0.36)
Peer-Group Characteristics					
Percent Minority Students	0.51 (0.37)	0.49 (0.35)	0.70 (0.27)	0.20 (0.22)	0.75 (0.25)
Percent Free Lunch Eligibility	0.65 (0.25)	0.64 (0.24)	0.79 (0.19)	0.50 (0.22)	0.74 (0.19)
Percent Low-achieving Students	0.43 (0.17)	0.43 (0.19)	0.49 (0.17)	0.34 (0.14)	0.50 (0.16)
School Resources					
Class Size	23.83 (4.43)	23.42 (4.42)	23.08 (4.42)	22.87 (3.74)	25.18 (4.90)
Availability of Instructional Resources	0.10 (0.78)	0.08 (0.59)	0.12 (0.70)	0.09 (0.76)	0.07 (0.64)
Teacher's Years of Experience	14.61 (5.74)	13.60 (5.63)	13.58 (5.36)	14.56 (5.83)	14.12 (5.81)

Table 2 (continued)

	RESILIENCE STATUS		RACE/ETHNICITY		
	Resilient	Non-Resilient	Afr. Am.	White	Latino
n	404	521	236	398	291
Effective Schools Features					
Clear Goals	-0.02 (0.61)	-0.08 (0.60)	-0.14 (0.66)	-0.02 (0.58)	-0.01 (0.58)
Percent of Academic Instruction	0.71 (0.11)	0.70 (0.11)	0.71 (0.11)	0.70 (0.11)	0.70 (0.10)
Strong Principal Leadership	-0.03 (0.60)	-0.01 (0.59)	-0.02 (0.60)	-0.06 (0.61)	0.03 (0.56)
Monitoring Student Progress	-0.03 (0.65)	-0.03 (0.60)	-0.15 (0.60)	0.04 (0.57)	-0.04 (0.70)
Supportive School Community					
Safe and Orderly Environment	-0.06 (0.50)	-0.16 (0.53)	-0.23 (0.39)	0.03 (0.51)	-0.19 (0.58)
Positive Teacher-Student Social Relations	0.39 (0.31)	0.25 (0.36)	0.28 (0.33)	0.32 (0.35)	0.36 (0.34)
Support for Family Involvement	-0.11 (0.37)	-0.11 (0.34)	-0.09 (0.34)	-0.06 (0.34)	-0.20 (0.38)

Note: Values enclosed in parentheses represent standard deviations. Afr. Am. = African American.

RESULTS

Individual Characteristics

Results of the two-way Resilience Status X Race MANOVA for individual characteristics associated with resilience are summarized in Table 3. The multivariate tests of both main effects were statistically significant ($p < .001$), while the interaction of resilience status and race was not. Univariate analyses for resilience status revealed statistically significant main effects for Student Engagement, Locus of Control, Self-Efficacy in Math, Positive Attitude toward School, and Self-Esteem, all of which favored resilient students. Univariate analyses for race revealed main effects for Locus of Control and Self-Efficacy in Math. Post hoc comparisons using the Bonferroni method indicated that low-SES White students tended to have a greater sense of control over their lives than their African American counterparts and have stronger feelings of efficacy in math than their Latino counterparts.

Thus, greater engagement in academic activities, an internal locus of control, efficaciousness in math, a more positive outlook toward school, and a more positive self-esteem were characteristic of low-SES students who achieved resilient outcomes in mathematics. Generally, these findings were fairly consistent across racial/ethnic groups, as the Resilience Status X Race interaction did not attain statistical significance. Locus of control, though, was somewhat more important in distinguishing resilient and non-resilient African American students than resilient and non-resilient White and Latino students.

Peer-Group Characteristics

The MANOVA results for peer-group characteristics are presented in Table 4. Statistically significant effects were found for race only ($p < .001$). Univariate analyses for race revealed differences for all three variables, percent minority students, percent free-lunch eligible students, and percent low-achieving classmates. Post hoc comparisons using the Bonferroni method revealed that low-SES White students attended schools with smaller proportions of minority students, free-lunch eligible students, and low-achieving classmates than low-SES African American and Latino students, regardless of resilience status.

Despite the potential risk associated with attending schools with high concentrations of under-achieving, economically disadvantaged minority students, these results suggest that it had little bearing on students' resilience status. This finding was relatively consistent across racial/ethnic groups, though low-SES African American and Latino students were consistently more likely than low-SES White students to attend schools with high proportions of low-achieving students from low-SES and minority backgrounds.

Table 3

Multivariate Analysis of Variance for Individual Characteristics

		Multivariate		Univariate *F*				
Source	*df*	*F*	*df*	Student Engagement	Locus of Control	Math Self-Efficacy	Self-Esteem	Attitude Toward School
Resilience Status	1	32.79***	5, 915	147.87***	37.09***	19.39***	8.69**	38.14***
Race	2	6.19***	10, 1830	4.13	6.79**	5.05***	3.19	2.07
Resilience Status x Race	2	1.75	10, 1830	1.91	3.84	0.58	0.36	0.10
Within-group Error	919			(0.35)	(0.17)	(0.32)	(0.15)	(0.19)

Note. Values enclosed in parentheses represent mean square errors.
*** $p < .001$, ** $p < .01$

Table 4

Multivariate Analysis of Variance for Peer-Group Characteristics

		Multivariate		Univariate *F*		
Source	*df*	*F*	*df*	Percent Minority	Percent Free Lunch	Percent Low Achievers
Resilience Status	1	0.94	3, 917	1.73	0.81	0.08
Race	2	152.05***	6, 1834	503.54***	192.32***	107.38***
Resilience Status x Race	2	1.34	6, 1834	2.91	1.54	0.10
Within-group Error	919			(0.00)	(0.00)	(0.02)

Note: Values enclosed in parentheses represent mean square errors.

*** $p < .001$.

Table 5

Multivariate Analysis of Variance for School Resources

		Multivariate		Univariate *F*		
Source	*df*	*F*	*df*	Class Size	Instructional Resources	Teacher's Experience
Resilience Status	1	2.30	3, 917	0.95	0.28	6.19
Race	2	8.88***	6, 1834	23.47***	0.39	2.13
Resilience Status x Race	2	0.56	6, 1834	0.82	0.55	0.40
Within-group Error	919			(18.56)	(0.50)	(32.41)

Note: Values enclosed in parentheses represent mean square errors.

*** $p < .001$, ** $p < .01$.

School Resources

The results of the two-way Resilience Status X Race MANOVA, listed in Table 5, indicated that the only statistically significant difference was for race ($p < .001$). Univariate analyses revealed a difference among racial groups for class size. Bonferonni post hoc comparisons indicated that low-SES Latino students were more likely to attend larger classes than low-SES White and African American students.

Thus, these outcomes indicate that conventional indicators of school resources, such as class size, teacher experience, and the overall availability of basic instructional supplies, were not necessarily important distinguishing features of the schools attended by academically resilient students. There is some evidence, though, that low-SES minority students attended schools with poorer levels of resources than did low-SES White students.

Effective Schools Variables

Results for the two-way MANOVA, listed in Table 6, revealed a main effect for race ($p < .001$), but no main effect for resilience status. Univariate analyses revealed only one difference by race for the monitoring student progress variable. Post hoc comparisons using the Bonferroni method indicated that low-SES White students held an advantage over low-SES African American students, in that they attended schools in which teachers more closely monitored their progress. The MANOVA for the interaction of Race X Resilience Status did not attain our stringent criterion of $p < .001$ ($p = .017$).

These results suggest that the schools attended by resilient and non-resilient students do not differ in terms of widely accepted effective schools indicators. Relative to low-SES White students, though, we found that low-SES African American students attended schools that were less characteristic of the effective schools model. This inequity may be of special importance, as there is some suggestive evidence that the resilience status of low-SES minority students was more dependent on attending an effective school than was the resilience status of low-SES White students.

Supportive School Community

Results of the two-way Resilience Status x Race MANOVA are summarized in Table 7. Both main effects were statistically significant ($p < .001$). Univariate analyses revealed differences for safe and orderly environment and for positive teacher-student relations, both of which favored resilient students. Univariate analyses also revealed statistically significant differences by race for safe and orderly environment and support for family involvement. Bonferroni post hoc comparisons indicated that low-SES White students attended schools with safer and more orderly environments than did minority students. The difference in support for parent involvement favored White and African American students over Latino students. Relative to low-SES Latino students, low-SES White and African American students attended schools that were more supportive of family involvement.

Table 6

Multivariate Analysis of Variance for Effective Schools Features

		Multivariate		Univariate *F*			
Source	*df*	*F*	*df*	Clear Goals	Percent Academic Instruction	Strong Principal Leadership	Monitoring Student Progress
Resilience Status	1	2.16	4, 916	0.98	3.79	0.47	0.04
Race	2	4.63***	8, 1832	3.84	0.84	1.83	6.61**
Resilience Status x Race	2	2.33	8, 1832	1.07	6.90**	0.52	0.94
Within-group error	919			(0.36)	(0.01)	(0.35)	(0.39)

Note: Values enclosed in parentheses represent mean square errors.

*** $p < .001$, ** $p < .01$.

Table 7

Multivariate Analysis of Variance for Supportive School Community

		Multivariate		Univariate *F*		
Source	*df*	*F*	*df*	Safe and Orderly Environment	Positive Teacher-Student Relations	Support for Family Involvement
Resilience Status	1	12.90***	3, 917	9.54**	31.20***	0.02
Race	2	13.12***	6, 1834	26.01***	2.07	12.94***
Resilience Status x Race	2	2.00	6, 1834	1.11	1.92	2.43
Within-group error	919			(0.25)	(0.11)	(0.12)

Note: Values enclosed in parentheses represent mean square errors.

*** $p < .001$, ** $p < .01$.

A more supportive school environment, therefore, was associated with students' academic resilience. A safe and orderly school environment and positive teacher-student relationships were the characteristics that mattered most. However, there appeared to be some inequities in the distribution of these school characteristics by race. Most importantly, low-SES White students attended schools with safer and more orderly environments than did their low-SES African American and Latino peers.

DISCUSSION

Most previous research on academic resilience has focused on at-risk minority students. Our results suggest that this focus has been well justified, in that the "double jeopardy" of being poor and a minority student exposes students to greater risks and fewer resilience-promoting conditions. Within our sample of African American, Latino, and White students from relatively homogeneous low socioeconomic status backgrounds, it is the disturbing fact that the minority students from this sample have poorer levels of internal locus of control and academic self-efficacy and are exposed to school environments that are less conducive to academic resilience. These "gaps" between minority and White children provide compelling explanations for the frequently noted achievement gaps that separate minority and majority students.

With respect to overcoming these achievement gaps, there is some suggestive evidence indicating that effective schools characteristics and an internal locus of control may be more important for African American students' academic resilience than for White and Latino students' resilience. These two findings are consistent with some earlier research from outside the area of resilience. First, because the foundation of the effective schools research tradition was built on a model of "what works" for disadvantaged African American students (Edmonds, 1979), it seems appropriate that the effective schools model had somewhat greater predictive strength for our low-SES African American subsample than for our other subsamples. With respect to our findings for locus of control, the early large-scale results from the Coleman report (Coleman et al., 1966) also indicated that having an internal locus of control was an especially powerful predictor of African American students' achievement.

In general, though, the results from the present study tend to support the applicability of uniform individual and school-level models of academic resiliency to all low-SES students, regardless of their race or ethnicity. Additional research is needed o assess our tentative findings for the roles of effective schools characteristics and locus of control in shaping African American students' academic resilience. The link between minority students' resilience and initiatives that specifically address the disparities between the school and home environments, such as multicultural education and the work of Boykin et al. (1997) on teaching with "verve," also deserve the attention of researchers.

differentiated resilient and non-resilient students. Effect sizes, which were calculated as the resilient students' mean on the variable of interest minus the non-resilient students' mean divided by the pooled standard deviation, for student engagement and locus of control revealed the largest differences of 0.75 and 0.41, respectively. Effect sizes for self-efficacy in math, $d = 0.29$, positive attitude toward school, $d = 0.27$, and self-esteem, $d = 0.21$, also revealed substantial differences favoring resilient students. Taken together, these findings provide a clear profile of the individual characteristics of academically resilient elementary students — a profile that appears to apply to children placed at risk from all racial backgrounds. The relative strength of student engagement in differentiating between resilient and non-resilient students also provides evidence consistent with that presented by Finn and Rock (1997), suggesting that students' active participation and interest in the classroom and school are very important forces for counteracting academic risk.

What form should a school-level model for fostering academic resilience take, and how may this model inform policy and theory? First, it does not appear that efforts to minimize risks within the school are highly productive policy options for promoting the academic resilience of elementary students. Though the peer group may be important for adolescent students, our analysis indicates that the social and academic backgrounds of an elementary student's peers have little to do with his or her chances of achieving resilient academic outcomes. Similarly, the risks associated with attending an under-funded and under-resourced school do not appear to be associated with students' outcomes.

These two results, though, should be considered in light of at least two caveats. First, because low-SES students tend to attend schools with high concentrations of poor and minority students who are low achievers, our regression model identifying resilient and non-resilient students, which controlled for student SES, may have partialled out some of the potential effects of these correlated school-level variables. Therefore, it is possible that our analyses may have underestimated the impacts of the peer composition model. This argument does not appear to apply to the findings for school resources, though, as our results do not suggest that low-SES students attended schools with resources that differed substantially from those afforded the average student in the Prospects sample. The composition of the student body at each school and overall measures of school resources, though, are less than precise measures of who each child befriends at the school and what available resources are at his or her disposal. It is very possible that both sets of measures varied considerably among students within the same school.

Rather than the widely used school-composition and school production-function models, the most powerful school models for promoting resiliency appear to be those that include elements that actively shield children from adversity. Most importantly, our analysis of the multivariate supportive school community model revealed that resilient students tend to develop much stronger and supportive relationships with their teachers than do non-resilient students. In our analysis, this difference between resilient and non-resilient students was equivalent to an effect size of 0.41.

Comparisons between the supportive school community model and the effective schools model pit two contrasting theories about which school processes are most important for fostering students' academic success. Phillips (1997) characterized the effective schools research and the early research on Catholic and private schools as belonging to the theoretical stream of "academic press." Phillips cites variables such as the amount of time spent on instruction, clear achievement-oriented goals, and high expectations for student achievement as exemplars of this tradition. In contrast to the emphasis that the academic press model places on individualism and instrumental motivation, the more recent communitarian model of school organization cites community, democracy, and an ethic of caring as indicators of successful schools (Bryk, Lee, & Smith, 1990; Noddings, 1988; Phillips, 1997). Also, rather than the direct link between academic press and student achievement, both the communitarian model and the supportive school community model stress that progress toward improved achievement begins with efforts to foster the healthy social and personal adjustment of students.

Our analysis lends the greatest support to the communitarian model of school organization. The relative strength of our supportive school community model is particularly appealing during an era when, as Phillips (1997) pointed out, traditionally communal institutions like families and neighborhoods have become less stable and supportive than they once were. The model is also appealing in the sense that its emphasis on the psychosocial adjustment of children addresses the potential lack of fit between the behavioral patterns and values socialized in the context of low-income and minority families and communities and those expected in the mainstream classroom and school contexts. Finally, and most importantly, the model has clear and direct applicability to the problem of academic risk because of its focus on fostering students' resilience.

This report adds to the academic debate concerning models of school effects and it adds to practical discussions of how to improve schools and the academic achievement of the students they serve. Specifically, our analyses have important implications for both theoretical and practical models for improving schools for poor and minority students. We find that attentiveness to the psychosocial adjustment and school engagement of academically at-risk students are the keys to academic resilience. We also find that school-based initiatives that actively shield disadvantaged children from the risks and adversities within their homes, schools, and communities are more likely to foster successful academic outcomes than are several other school-based efforts. The large differences between resilient and non-resilient children on the individual characteristics, and the roots of resilience within individual differences, also suggest that there may be as much to learn by studying the characteristics of "effective students" as there is to learn by studying the features of "effective schools." Future analyses that model the correlates of at-risk students' academic success as potential pathways and interactions between individual differences and school organizational attributes may be especially powerful for understanding resilience among poor and minority children.

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ENDNOTES

1. Some notable exceptions exist, especially regarding how racially integrated schools may impact African American adolescents' academic outcomes. Clark (1991), for instance, reviewed research suggesting that at-risk African-American high school students who had interracial friendships developed better academic and social outcomes in high school and in college. Clark conceptualized these resilient outcomes as a product of African American students' mainstream socialization, which is often required to succeed in the decidedly middle-class culture of schools.

2. We calculated a four-year average of 2.5 for parent education level, which was coded one to nine, where 2.0 is "beyond 8th grade" and 3.0 is "high school graduate or GED." The four-year average of 4.67 for income, which ranged from one to ten, was between 4.0, "$7,500 to $9,999," and 5.0, "$10,000 to $14,999."

3. Three factors appeared to compromise the measurement performance of this factor: (a) two items from the Prospects Student Questionnaire referred specifically to locus of control within the school context while the other two questionnaire items referred to locus of control more generally; (b) the Prospects Student Questionnaire included only two response options for each item, "mostly agree" and "mostly disagree;" and (c) this sample of children was relatively young and their responses may be somewhat unreliable.

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